

Skilling India to Become the Biggest Economy by 2035

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Abstract

This paper discusses the skills India's workforce needs to cultivate in order to leverage opportunities in high growth industries with a view to becoming the world's largest economy by 2035.

The industries that the paper has categorized as 'high growth', are ones that are expected to do well in view of global economic trends and sectoral growth opportunities.

These industries are likely to help move the needle on India's GDP growth significantly. The paper also provides research on skill development models to show how India could skill its employable population effectively and efficiently.

The study emphasizes the need for large-scale skilling in sectors such as manufacturing, technology, renewable energy, healthcare, financial services and logistics.

Drawing on global best practices and domestic policy successes, the paper proposes scalable strategies for skill development. These strategies include vocational training, industry-academic partnerships, digital platforms and public-private initiatives.

This study highlights the importance of aligning education with industry needs. It talks about cultural resistance to vocational training and also discusses the inconsistent quality of current training programs. It gives insights into successful skilling models from China, Germany and South Korea, with a view to propose ways in which India can adapt these strategies within its unique socio-economic context.

By leveraging India's diverse demography, investing in people and addressing skill mismatches, India can fast track its transition from a service-based economy to a manufacturing and technology-led one

This paper shows that a focused skilling strategy, along with innovative policy measures and sustained political will, can help India become the largest global economy by 2035.

Introduction

Why This Conversation Now?

India became the fifth-largest economy in the world in 2021, overtaking Britain. The International Monetary Fund (IMF) projects that India will become the third-largest economy by 2030, surpassing both Japan and Germany. To move ahead of the United States and China by 2035 will be the real challenge - India will need to maintain double-digit GDP growth consistently over the next decade to win.

India's growth over the past two decades has been largely driven by the services sector, especially information technology (IT) and financial services.

However, services alone cannot generate enough employment or GDP growth to support a population of 1.4 billion and growing. India, therefore, needs to diversify into manufacturing, technology, healthcare and renewable energy - sectors that have higher multiplier effects on both GDP and job creation.

For India, the next 15 years are a real window of opportunity in terms of her demographics. Over 65% of India's population is under the age of 35, accounting for one of the largest potential workforces in the world. By 2040, India's working-age population will be at its peak, making the current decade critical for skill development.

If India's young workforce is equipped with the right skills, it could fuel rapid economic expansion. On the flip side, if the country does not take the right measures to skill her youth appropriately, underemployment and low productivity could lead to economic stagnation and social instability.

India's skilling challenge is twofold:

1. Closing the gap between the existing skills of our workforce on the one hand and the needs of a rapidly evolving global economy on the other.
2. Creating a scalable and sustainable framework to regularly reskill workers as new industries and technologies emerge in these uncertain times.

The Gaps This Study Aims to Fill

Many existing studies on India's economic growth focus on macroeconomic reforms, infrastructure and trade policies. They do not take into account the important link between economic growth and the part human talent plays. While India has launched programs like Skill India, these initiatives are fragmented and are not consistent.

This paper addresses the following gaps:

- Identifying the industries that can drive India's GDP growth.
- Mapping the skills required for high-growth sectors.
- Proposing scalable strategies for large-scale skill development.
- Analyzing how global best practices can be adapted to the Indian context.

Methodology

This study adopts a mixed-methods approach:

1. Quantitative Analysis

- Analysis of data from the World Bank, IMF and Indian government reports to identify sectoral growth trends and skill gaps.
- Evaluation of employment rates, productivity, and GDP contribution of key industries.

2. Qualitative Analysis

- Review of existing literature and case studies on skilling models in India and abroad.

3. Comparative Analysis

- Comparison of India's skilling and growth strategies with those of China, South Korea, Germany and Singapore.
- Identification of best practices and lessons for India.

High-Growth Industries Driving India's GDP

1. Manufacturing

Manufacturing currently contributes only about 17% to India's GDP - significantly lower than China which is at 25%. Given India's large labour pool, increasing our manufacturing base is not only crucial for economic growth but for job creation and global competitiveness as well.

To achieve a strong manufacturing base, our country must make strategic reforms and come up with new initiatives.

Key Strategies for Manufacturing Growth:

Develop Industrial Corridors and Special Economic Zones (SEZs)

Industrial corridors and Special Economic Zones (SEZs) create hubs of economic activity, attracting both domestic and foreign companies.

These zones provide:

- World-class infrastructure with reliable power, water and transportation.
- Policies that reduce bureaucratic delays and promote ease of doing business.
- Tax incentives and subsidies that encourage investment
- Proximity to ports and logistics hubs, making it easier to move goods

For example, India's Delhi-Mumbai Industrial Corridor (DMIC) has been designed with a view to develop smart cities along the route for improved efficiency and connectivity. These types of corridors can boost regional economies and jobs at scale.

Draft Friendly Policies to Attract Foreign Direct Investment (FDI)

Currently, foreign investors face regulatory challenges including lengthy approval processes, issues when acquiring land and sudden policy changes.

To attract greater FDI, India must:

- Simplify land acquisition laws to ensure timely allocation for factories and plants.
- Digitize and automate approval processes to reduce delays and corruption.
- Ensure policy stability to build investor confidence.

A good example of a country that has attracted FDI is Vietnam - Vietnam has streamlined its regulations, making it an attractive destination for foreign manufacturers. By making similar changes, India can become a strong alternative to China for companies looking to diversify their supply chains.

Improve Infrastructure and Supply Chain Efficiency

Efficient supply chains hold the key to a strong manufacturing sector. Currently, logistical problems in India serve only to increase production costs and to delay shipments.

Key improvements needed include:

- Upgrading transportation networks (roads, railways, ports and airports) to ensure smooth movement of goods.
- Increasing the number of cold storage and warehousing facilities
- Leveraging digital technology, such as blockchain and AI-driven logistics, to enhance tracking and efficiency.

A country that has created world class infrastructure is China. China's high-speed rail network has significantly reduced both freight transport time and cost. India's Gati Shakti initiative, designed for multi-modal logistics integration, is a step in the right direction.

Skills Needed for the Manufacturing Sector

1. Industrial Engineering

- Industrial engineers focus on optimizing production processes, reducing waste and improving efficiency.
- Skills in Lean Manufacturing, Six Sigma and process automation are essential.

2. Supply Chain Management

- Management of raw materials, production timelines and distribution networks is crucial.
- People must be trained in inventory management, logistics optimization and procurement strategies.

3. Automation and Robotics

- Manufacturers need expertise in robotics, AI-driven automation and smart manufacturing to stay competitive.
- Knowledge of PLC (Programmable Logic Controllers), IoT-enabled machinery and predictive maintenance is increasingly valuable.

4. Quality Control

- Skills in statistical process control, ISO certifications and defect prevention methodologies are becoming more and more important.

By investing in these skills, India can significantly boost its manufacturing sector, drive GDP growth and create millions of high-quality jobs.

Technology and AI

The global artificial intelligence (AI) market is projected to reach \$1.8 trillion by 2030. The key drivers of this growth are advancements in automation, data analytics and cloud computing. India is well-positioned to emerge as a leader in AI and automation given its prowess in the IT domain.

If India can skill a big pool of professionals, create a strong startup ecosystem along with a solid digital infrastructure, it could become a leader in the Technology and AI space.

Key Strategies for AI and Technology Growth

AI and Machine Learning Can Increase Productivity and Reduce Costs

AI-driven automation has the potential to revolutionize industries by:

- Optimizing business operations through predictive analytics and intelligent decision-making.
- Enhancing efficiency in sectors like healthcare (AI-powered diagnostics), finance (fraud detection) and manufacturing (smart factories).
- Reducing costs by minimizing human errors and automating repetitive tasks. For example, AI-powered chatbots and virtual assistants are improving customer service while reducing labor costs. In agriculture, AI-driven solutions are helping farmers optimize irrigation and predict crop yields, leading to higher productivity and sustainable farming practices. Indian Startups and Multinational Companies are Investing Heavily in AI Research. India has seen a surge in AI-focused startups, with companies like Freshworks, Fractal Analytics and Mad Street Den leading AI innovation. International heavy weights like Google, Microsoft and Amazon have also set up AI research hubs in India to get access to the country's high quality engineering talent.
- Government initiatives like the National AI Strategy (NITI Aayog) are looking to position India as a global AI leader.
- AI-focused venture capital funding has increased, enabling the growth of deep-tech startups.
- Public-private partnerships are encouraging AI research in fields like healthcare, education and smart cities. For example, Microsoft's AI for Earth initiative is using machine learning to fight climate change in India. Google's AI research lab in Bengaluru is focusing on natural language processing (NLP) for Indian languages.

India's Digital Infrastructure Can Accelerate AI Adoption

India's robust digital infrastructure includes:

- Unified Payments Interface (UPI) – Enables seamless digital transactions, paving the way for AI-driven fintech solutions.
- Aadhaar – Provides a biometric digital identity for over a billion citizens, enabling AI-powered authentication.
- DigiLocker and e-Governance platforms – Leverage AI for smart automation and service delivery.

These innovations create an AI-ready ecosystem, allowing companies to integrate big data analytics, AI-driven automation and cloud computing into their operations more efficiently.

Skills Needed for AI and Technology

1. Machine Learning

- Understanding of neural networks, deep learning, natural language processing (NLP) and AI model development.
- Experience with frameworks like TensorFlow, PyTorch and Scikit-learn.

2. Data Science

- Expertise in data analysis, big data processing and AI-driven insights.
- Proficiency in Python, R, SQL and data visualization tools.

3. Cloud Computing

- Knowledge of cloud platforms like AWS, Azure and Google Cloud to support AI workloads.
- Experience with serverless computing, edge AI and scalable AI deployments.

4. Cybersecurity

- AI-driven cybersecurity measures are critical to protect sensitive data and digital infrastructure.
- Skills in penetration testing, threat analysis, encryption and ethical hacking are sought by large companies.

By investing in AI-driven innovation and upskilling its workforce, India can cement its position as a global technology leader and grow its GDP.

Renewable Energy

India is committed to achieving net-zero carbon emissions by 2070, in its bid to align with global sustainability goals.

The country's renewable energy sector is projected to attract over \$200 billion in investment by 2030, positioning India as a powerful player in the global transition to green energy. With abundant solar and wind resources, government-backed incentives and better energy storage, this sector can drive economic growth while promoting environmental sustainability.

Key Strategies for Renewable Energy Growth

Expanding solar and wind capacity can reduce energy costs and create jobs:

- Solar energy: India ranks among the top five solar power producers globally, with initiatives like the Jawaharlal Nehru National Solar Mission (JNNSM) aiming to boost capacity to 280 GW by 2030.
- Wind energy: India has one of the largest installed wind power capacities in the world, with offshore wind projects growing rapidly.

Expanding renewable energy capacity benefits India by:

- Reducing electricity costs
- Creating millions of jobs in manufacturing, installation and maintenance of renewable energy infrastructure.
- Improving energy security by reducing our dependence on imported fossil fuels.

To strengthen domestic manufacturing in the renewables industry, India must:

- Encourage local production through initiatives like the Production-Linked Incentive (PLI) scheme, which supports Indian companies that make solar panels and wind turbines.
- Create a skilled workforce to support the manufacturing of renewable energy components within India.
- Invest in research and development (R&D) to improve efficiency and reduce costs of domestically produced solar and wind technologies. For example, the Atmanirbhar Bharat initiative is promoting self-sufficiency in renewable energy manufacturing. Green hydrogen production presents another opportunity for energy Independence - Green hydrogen, produced using renewable energy sources, is being seen as a key solution for long-term energy storage and industrial decarbonization.

India has set goals to become a global leader in green hydrogen production, with initiatives such as The National Hydrogen Mission through which India will be positioned as a major producer and exporter of green hydrogen.

India needs to do the following to achieve these goals:

- Invest in electrolyzer technology, which enables the conversion of water into hydrogen using renewable electricity.
- Partner with international firms to create a green hydrogen economy, especially for sectors like steel, cement and transportation.

Green hydrogen is well poised to replace fossil fuels in heavy industries, reduce carbon emissions and enhance energy independence by leveraging India's abundant renewable energy resources.

Skills Needed for the Renewable Energy Sector

1. Electrical Engineering

- Expertise in solar panel installation, wind turbine maintenance and power grid integration.
- Knowledge of microgrid technologies and smart grid solutions.

2. Renewable Energy Project Management

- Ability to oversee large-scale solar farms, wind farms and hydrogen production projects.
- Skills in policy implementation, financial modeling and stakeholder collaboration.

3. Energy Storage and Distribution

- Understanding of battery technologies, grid-scale energy storage solutions and hydro storage.
- Expertise in lithium-ion battery systems, hydrogen fuel cells and next-gen energy storage innovations.

By scaling renewable energy capacity, localizing manufacturing and advancing green hydrogen initiatives, India can reduce carbon emissions, enhance energy security and generate new jobs.

4. Healthcare

India's healthcare market is expected to reach \$372 billion by 2025, thanks to rising incomes, healthcare awareness and technological advancements. With a rapidly growing population, an aging demographic and the rising occurrence of non-transmittable diseases, the country must improve healthcare infrastructure, create better access to medical services and invest in domestic pharmaceutical production,

Key Strategies for Healthcare Growth

Expanding access to healthcare can increase life expectancy and productivity. India still faces gaps in healthcare accessibility, particularly in rural and underserved areas.

Expanding healthcare access can:

- Increase life expectancy, leading to a healthier workforce and higher productivity.
- Reduce preventable diseases, thus lowering healthcare costs.
- Improve maternal and child health, reducing mortality rates.

To achieve the above, India needs to:

- Increasing the number of hospitals, clinics and trained medical professionals.
- Invest in public health programs like immunization drives and preventive healthcare.
- Promote health insurance penetration to make medical services more affordable. For example, the Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (PMJAY) is the world's largest government-funded healthcare scheme, providing insurance coverage to over 500 million Indians.

Telemedicine and Medical Tourism Present Growth Opportunities

The telemedicine market in India has grown exponentially, especially after COVID-19, providing remote consultations, diagnostics and digital health records.

- Artificial intelligence (AI)-driven diagnostics and wearable health devices are improving patient care.
- The government's eSanjeevani telemedicine platform has facilitated millions of virtual doctor consultations.
- Medical tourism is a large and growing industry, with India emerging as a global hub for affordable, high-quality medical care. India attracts over 500,000 medical tourists every year. They come here for affordable treatment in cardiology, oncology, orthopedics and cosmetic surgery.
- The cost of major surgeries in India is 60–80% lower as compared to those in Western countries.

To capitalize on this, India can:

- Create friendly regulatory frameworks for international patient care.
- Develop world-class hospitals with advanced medical facilities.
- Leverage global marketing campaigns promoting India as a medical tourism hub.

India is already known as the “Pharmacy of the World”, supplying over 20% of global generic drugs. However, dependence on imports for critical medical devices and Active Pharmaceutical Ingredients (APIs) is still a challenge.

Strengthening domestic production can:

- Reduce dependency on imports, ensuring a stable supply of essential drugs and medical devices.
- Boost exports by positioning India as a global leader in pharmaceuticals and medical technology.
- Lower healthcare costs, making essential treatments more affordable for Indian citizens.

Government initiatives like the Production-Linked Incentive (PLI) scheme for pharmaceuticals and medical devices were set up to encourage domestic manufacturing and reduce reliance on imports from China.

Indian pharmaceutical giants like Sun Pharma, Cipla and Dr. Reddy's Laboratories are expanding their global footprint, exporting to the US, Europe and emerging markets.

Skills Needed for the Healthcare Sector**1. Medical Technology**

- Expertise in biomedical engineering, AI-driven diagnostics and medical device development.
- Knowledge of robotic surgeries, health informatics and telemedicine platforms.

2. Clinical Research

- Experience in drug trials, epidemiology and vaccine development.
- Knowledge of Good Clinical Practice (GCP) guidelines and regulatory compliance.

3. Pharmaceutical Production

- Skills in formulation development, API synthesis and quality control.
- Understanding of Good Manufacturing Practices (GMP) and supply chain logistics for pharmaceuticals.

By expanding healthcare infrastructure, implementing digital health solutions and boosting domestic pharmaceutical production, India can enhance public health, create employment and strengthen its global position in the healthcare industry.

Financial Services

India's financial services sector is projected to grow to \$1.2 trillion by 2030. This growth will be caused by digital transformation, higher incomes, increasing financial literacy, and government initiatives. This sector plays a critical role in driving economic growth as it facilitates investments, credit access, risk management and wealth creation. With rapid digitization and the expansion of fintech, India is poised to become one of the largest financial hubs globally.

Key Strategies for Financial Services Growth**Expanding Financial Inclusion Through Digital Banking and Microfinance**

Financial inclusion is still a priority for India, as a large segment of the population still has limited or no access to traditional banking services.

Expanding digital banking and microfinance can:

- Boost economic participation, allowing small businesses and rural populations to get credit.
- Reduce income inequality, enabling underprivileged sections to save, invest and grow financially.
- Increase transaction transparency, reducing dependency on cash-based transactions and curbing financial fraud. Government initiatives such as the Jan Dhan Yojana have already helped create over 500 million new bank accounts, Unified Payments Interface (UPI) has made digital transactions accessible to a larger population.
- Neobanks (fully digital banks) and mobile banking services are helping narrow the gap in rural and semi-urban areas.
- Microfinance institutions (MFIs) are giving low-income groups small loans, encouraging entrepreneurship and financial independence.

Growth in Insurance, Wealth Management and Asset-Based Financing

As India's middle-class and high-net-worth (HNW) population grows, so does the demand for:

- Insurance: More individuals and businesses are investing in health, life, and property insurance. Government-backed schemes like Ayushman Bharat and PM Fasal Bima Yojana (crop insurance) are helping create adoption.

- Wealth management: The increasing affluence of India's young talent has led to a surge in mutual funds, stocks, retirement planning and alternative investment funds (AIFs).
- Asset-based financing: With a strong real estate and startup ecosystem, India is witnessing a rise in venture capital, leasing and secured lending.

The Securities and Exchange Board of India (SEBI) has been implementing reforms to boost retail investments, while digital platforms like Zerodha, Groww and Paytm Money are making wealth creation more accessible.

Skills Needed for the Financial Services Sector

1. Financial Analysis

- Expertise in investment analysis, valuation and portfolio management.
- Ability to interpret financial statements, economic indicators and market trends.

2. Risk Management

- Knowledge of credit risk, market risk and regulatory compliance.
- Experience with fraud detection, cybersecurity in financial transactions and stress testing models.

3. Fintech Development

- Skills in blockchain, AI-powered financial analytics and digital payments infrastructure.
- Understanding of regulatory technology (RegTech) and cybersecurity frameworks for digital banking.

Through financial inclusion, digital technologies and investment and risk management frameworks, India's financial services sector can stimulate economic growth, create jobs and solidify its position in the global arena.

Logistics and Infrastructure

India's logistics market is expected to grow at 10% annually, going to \$500 billion by 2030. Efficient logistics and good infrastructure are critical for economic growth as they ensure the smooth movement of goods, lower costs and improve trade efficiency. With increasing globalization, upgrading supply chains and transportation networks is required to keep India competitive in global markets.

Key Strategies for Logistics and Infrastructure Growth

Efficient supply chain management can reduce costs and improve competitiveness. India's logistics costs are estimated to be about 14% of GDP, significantly higher than the 8-10% benchmark in developed nations. Inefficiencies in transportation, warehousing and distribution lead to higher costs and longer delivery times, making India less competitive than other countries.

To address these issues, India must:

- Digitize supply chain management through AI-driven forecasts, real-time tracking, and blockchain-based logistics.
- Strengthen multimodal logistics by integrating road, rail, air and water transport systems.
- Expand warehousing infrastructure to meet growing demands from e-commerce, retail and manufacturing industries. Initiatives like the PM Gati Shakti National Master Plan is helping to reduce logistics costs, integrate supply chains and improve last-mile access.

Investment in ports, railways and roads can improve trade efficiency. A well structured infrastructure network is critical when it comes to reducing transportation bottlenecks and growing exports.

Investments in ports, railways, roads and airports can:

- Enhance trade efficiency, making Indian exports more competitive.
- Reduce transit times, improving supply chain reliability.
- Attract foreign investment.

Key infrastructure projects driving this transformation include:

- Sagarmala Project: Plans to modernize coastal shipping, inland waterways and port-led industrialization.
- Dedicated Freight Corridors (DFCs): Improving rail freight capacity, reducing dependence on road transport and lowering carbon emissions.
- Bharatmala Project: Developing highways and expressways to improve road connectivity for goods movement.

Skills Needed for the Logistics and Infrastructure Sector

1. Transportation Engineering

- Expertise in road, rail, port and airport infrastructure design.
- Knowledge of smart traffic management and sustainable transport solutions.

2. Logistics Management

- Experience in fleet management, warehouse operations and inventory control.
- Ability to use AI-driven logistics platforms and digital tracking systems.

3. Supply Chain Optimization

- Skills in demand forecasting, procurement strategies and lean supply chain management.
- Understanding of cross-border trade logistics and customs clearance processes.

By investing in infrastructure, leveraging technology in supply chains and improving trade logistics, India can reduce costs, increase exports and strengthen its position as a global logistics hub.

Strategies to Develop Skills at Scale

Vocational Training and Apprenticeships

India's current vocational training ecosystem is broken - with many programs not aligned with industry needs. To develop a skilled workforce, India needs to expand and modernize vocational training infrastructure. Learning from successful global models like Germany's dual education system, where students combine classroom learning with hands-on industry experience, can be a good way to start.

Key Strategies to Scale Vocational Training and Apprenticeships:

1. Establishing More Industrial Training Institutes (ITIs) with Modern Curricula - India currently has over 15,000 ITIs, but many don't have access to new equipment, updated curricula and industry alignment.

Here's what India can do:

- New ITIs should focus on high-growth sectors such as renewable energy, robotics, artificial intelligence and advanced manufacturing.
- Public-Private Partnerships (PPPs) can be encouraged to facilitate the creation of state-of-the-art infrastructure and relevant course content.
- ITIs should introduce modular training programs that allow learners to gain certifications in shorter time frames and upskill as needed.

- Soft skills training, such as communication, teamwork and critical thinking, must be incorporated to improve employability.
- 2. Encouraging Businesses to Participate in Apprenticeships Through Financial Incentives. Businesses often hesitate to invest in apprenticeships due to high training costs and uncertain returns.

To encourage participation:

- The government can offer tax incentives and subsidies to companies that hire apprentices.
 - A National Apprenticeship Program can be launched, modeled after Germany's dual education system, ensuring that students receive structured, paid on-the-job training.
 - Companies can be encouraged to provide pre-placement offers to high-performing apprentices.
 - A 'Skill Voucher System' can be introduced, where businesses receive government-backed vouchers for every trainee, which can be used for future workforce development.
3. Collaborating With Global Institutions to Introduce Internationally Recognized Skill Certifications - Many Indian vocational qualifications lack global recognition, limiting employment opportunities abroad.

India can:

- Partner with global institutions such as the Technical and Further Education (TAFE) institutions in Australia, the Singapore SkillsFuture Initiative and Germany's Vocational Education and Training (VET) program to standardize training.
- Encourage ITIs and polytechnics to offer certifications accredited by global industry bodies such as AWS (for cloud computing), Siemens (for industrial automation) or Bosch (for automotive engineering).
- Introduce bilateral agreements with other economies to enable international mobility of skilled Indian workers.

By modernizing ITIs, incentivizing businesses and adopting globally recognized certifications, India can help its workforce get industry-relevant skills and create a pipeline of job-ready professionals.

Industry-Academic Partnerships

A major challenge in India's education system is the disconnect between the syllabus that schools and colleges teach and industry requirements. To close this gap, India can adopt South Korea's industry-linked education model, where businesses play a powerful role in shaping academic curricula and providing practical training.

Key Strategies for Strengthening Industry-Academic Collaboration

1. Creating Sector-Specific Centers of Excellence in Universities - Centers of Excellence (CoEs) within universities can serve as research hubs and skill incubators, providing hands-on experience in high-demand sectors.

These centers should be co-funded by the government and private companies, focusing on:

- AI & Data Science (with Google, Microsoft and Indian IT firms).
- Fintech & Blockchain (with banks and fintech startups).
- Advanced Manufacturing (with automotive and aerospace firms).
- Biotechnology & Healthcare (with pharma giants and medical device manufacturers).
- Companies can deploy real-world projects in these centers, enabling students to work on real world industry problems and gaining practical experience.

- Establishing university-led startup incubators within CoEs will encourage entrepreneurship and create new job opportunities.
- 2. Introducing Mandatory Industry Internships for Undergraduate Students - In South Korea, students must complete industry internships as part of their degree programs.

India can replicate this by:

- Making six-month industry internships compulsory for students in engineering, business, healthcare and applied sciences.
- Establishing government-backed internship websites that connect students with verified companies.
- Offering incentives to encourage businesses to onboard interns.
- Encouraging credit-based internships, where work experience is part of the graduation requirements. Mandatory internships will reduce the employability gap since new entrants will have hands-on experience.
- 3. Designing Curricula Based on Inputs From Major Employers in AI, Fintech, Healthcare and Manufacturing
- Educational institutions should work directly with companies to update syllabi every two years to reflect changes in the industry.
- Joint faculty appointments should be introduced, where industry experts serve as professors for a term or two to provide real-world insights.
- Academic training should include case studies and project-based learning using real world industry challenges.
- Skill councils comprising government, academia and industry representatives should be created to standardize curricula for new sectors.

By aligning education with industry needs, India can enhance job readiness, drive innovation and fuel economic growth.

Digital Skilling Platforms

India's strong digital infrastructure, built on initiatives like Digital India, Aadhaar-based authentication and affordable mobile data, provides an excellent foundation for online skill development platforms. With the rise of automation, AI and digital transformation, regular upskilling and reskilling are essential to help our workforce stay competitive. Focusing on digital skilling initiatives can bridge the skill gap, particularly for underprivileged, marginalized and rural populations.

Key Strategies to Enhance Digital Skilling Platforms

1. Expanding the Digital India Initiative to Include AI-Driven Personalized Learning - The Digital India initiative has successfully promoted internet access and e-governance, but the government can look to include AI-driven personalized learning platforms that:
 - Analyze individual learning patterns and recommend tailored courses.
 - Use adaptive learning technology to account for different skill levels and learning speeds.
 - Leverage AI tutors and chatbots to provide real-time feedback and support.

The above approach ensures that students get customized training rather than a one-size-fits-all curriculum, making the learning process more efficient and engaging.

2. Partnering with Ed-Tech Companies to Offer Free and Low-Cost Certification Programs - India's ed-tech ecosystem, featuring platforms like Coursera, Udemy and UpGrad, has revolutionized digital

education.

To make skill development more accessible:

- The government can partner with ed-tech firms to offer subsidized or free certification programs in high-demand skills.
 - Industry-led certification programs can be co-developed with leading corporations, ensuring job market fit.
3. Providing Access to Digital Training for Rural and Marginalized Populations - Despite India's digital push, rural and marginalized communities still struggle with little access to high quality education and skilling opportunities.

To bridge this gap:

- Expand the BharatNet project to improve broadband connectivity in remote areas, enabling rural people to take online courses.
- Establish community-based digital learning hubs with government and private sector funding.
- Offer vernacular language digital courses to include learners from non-English-speaking backgrounds.

By democratizing digital learning, India can ensure equitable skill development and workforce participation across the country.

Public-Private Initiatives

A collaborative approach between the government and private sector can help fast track scalable skill development programs. Successful models worldwide, such as Germany's dual education system and Singapore's SkillsFuture, show that industry-backed skilling programs significantly increase employability.

Key Strategies for Public-Private Collaboration

1. Incentivizing Corporations to Fund Skill Development Through Tax Benefits

To encourage private sector participation:

- Tax deductions can be given to companies that invest in employee training programs or sponsor workforce upskilling initiatives.
- Skill development-linked CSR (Corporate Social Responsibility) incentives can be introduced to encourage firms to fund technical and vocational training programs.
- Large corporations can be encouraged to create training centers and design job-oriented courses tailored to their requirements.

This approach aligns corporate incentives with national skilling goals, ensuring long-term participation from businesses.

2. Establishing Training Hubs in SEZs for Direct Industry Absorption

Establishing training centers within SEZs can:

- Ensure that skilled workers are available on-site, improving industry absorption rates.
- Reduce training-to-employment time, as companies can directly hire candidates that know the job.
- SEZ-based skill centers can focus on high-growth sectors, such as manufacturing, IT, renewable energy and logistics, ensuring a steady pipeline of job-ready professionals.

3. Encouraging Multinational Companies to Invest in India's Workforce Training - With international companies expanding in India, it's a good strategy to attract foreign investments in workforce training.

The government can:

- Introduce special incentives for MNCs that set up training centers in India.
- Incentivize company partnerships with Indian universities to develop global-standard courses in high growth areas.
- Promote India as a skilling destination, encouraging foreign companies to train talent from other developing economies as well.

International collaborations will position India as a global leader in workforce training and talent development.

Government-Led Programs

While the Skill India Mission has made notable progress, further work must be undertaken to scale workforce training, improve quality and ensure widespread participation.

Key Strategies for Strengthening Government-Led Skilling Programs

1. Increasing Budget Allocations for Skill Development Programs - Although India has multiple skilling initiatives, a higher budget allocation is required to:
 - Expand vocational training centers across rural and semi-urban regions.
 - Subsidize industry-recognized certifications.
 - Develop cutting edge infrastructure like AI-driven simulators and virtual labs.
2. Strengthening Vocational Training at the School Level - Currently, most Indian students do not receive hands-on vocational training in schools and as a result a large percentage of students are not employable.

To address this:

- Vocational training should be introduced into school curricula from the 8th standard onwards.
 - Schools should partner with industries for internships for their students.
 - Skill-based assessments should be conducted along with academic evaluations to incentivize vocational training.
 - Early exposure to vocational training will help students make informed career decisions and develop the right skills.
3. Establishing a National Skilling Authority to Streamline Skilling Initiatives Across States - India currently has several central and state-level skilling programs, but they are fragmented and not as effective as they could be.

A National Skilling Authority (NSA) can:

- Standardize skill certifications to ensure nationwide recognition.
- Coordinate between industries, training institutes and policymakers to align skilling efforts with market needs.
- Create a real-time skilling database to track skill demand, training enrollment and job placements across regions.

By centralizing skilling initiatives, India can streamline efforts across different stake holders, prevent redundancy and create real impact.

Challenges and Barriers

India faces several challenges in implementing a large-scale skilling strategy:

- Infrastructure Gaps: Limited training facilities and dated syllabi slow the pace of skill development.
- Cultural Stigma: Indian people still view vocational training as inferior to academic degrees.

- **Regional Disparities:** Rural areas lack access to quality training programs.
- **Lack of Industry Participation:** Many businesses don't commit to invest in long-term training programs due to the expenses they entail and a lack of incentives.
- **Policy Fragmentation:** Multiple government agencies run overlapping programs, leading to waste and inefficiency.

To address these challenges, India must:

- Strengthen public-private partnerships to improve infrastructure.
- Launch awareness campaigns to change perceptions of vocational training.
- Standardize certification programs for national and international recognition.

Conclusion

India's path to becoming the world's largest economy by 2035 depends on large-scale investment in people. With a structured and well-funded skilling strategy, India can create a workforce that drives innovation, productivity and sustainable growth. The government, private sector and educational institutions must collaborate to create a future-ready workforce capable of propelling India to global economic leadership.

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